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ABSTRACT

Describing the Union 58 Experimental Schools Program (ESP) in northern, rural New Hampshire, this curriculum guide presents the concept of "proximity congruency" as a means for developing elementary level (grades four through six) student sensory awareness of the environment in outdoor and/or environmental education procedures. Proximity congruency is defined as a state of harmony existant between two or more animate and/or inanimate objects wherein there is a natural state of interaction. Some of the outdoor education strategies for achieving proximity congruency mentioned are field trips, nature walks, and site studies. Additionally, this guide presents eight sample environmental education sensory lessons in a format that includes the following: educational focus (earth's resources, plants and animals, recreation, metric measure, and/or measurement); the concept to be explored; grade range; purpose; and numerous exemplary student activities. (JC)

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Strategies To Affect Student Sensory Awareness Of The Environment In A Rural Schools Setting: Grade Four Through Grade Six

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ABOUT THE AUTHOR

Richard Peters is currently director of an NIE funded Experimental Schools Program (ESP) project in northern New Hampshire. This New England site is one of ten such ESP projects funded - nationwide.

The Bachelor of Science in Education and Masters of Education degrees were received from the University of Maine, Orono, and the Doctor of Education degree in Curriculum and Instruction was granted by the University of Rochester (NY).

Dr. Peters has educational leadership and supervisory experience as a classroom teacher (grades 5-12); as a K-12 curriculum coordinator; as a grades 9-12 department chairman; as a grades 7-9 ESEA Title III curriculum researcher; as a projects director for Educational Research Associates; and as the ESP project director (since July 1973).

Dr. Peters has provided leadership in the field of public school environmental education since 1970 when he developed a science/social students elective mini course entitled Man and His Environment (ED 107-549). Since then, Dr. Peters has written several published articles; has developed a classroom simulation for STEM, Inc.; has been advisor to several EE projects; and has published a "How To Do It" paper for the National Council for the Social Studies (NCSS) entitled "How To Teach About Human Beings and Their Environment" (#28).

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It is a truism that

> "man interacts with both natural and social environmental phenomena on a day-to-day basis. Interaction alone is not enough, if we are to intelligently conserve, manage, and protect our natural and human resources. An introduction to- and awareness of the natural surroundings provides a basis for direct human interaction with environmental phenomena and enhances leisure time activities and recreation".[1]

It is upon this premise that the Union 58 Experimental Schools Program (ESP) project has based its student sensory awareness-of-the-environment program; grades four through six.

In order to make one aware - there is a need to, first, affect some change in existing attitudes and perceptions. If children are to become sensitive about the character and quality of the surrounding life space environment; a sensitivity and concern which will remain with them all their adult lives, they must be exposed to the nature and to the beauty - as well as to the necessity - of a quality life space.

If students are to become acutely aware of the things (natural and social artifacts) and people about them, and are expected to better understand their day-to-day inter-dependence and relationships, then they (the students) must be helped in this process. Under the tutelage of teachers and concerned parents - as well as interested community members - students can be shown that artifacts/elements which comprise the total perceived/non-perceived life space do serve a necessary function.

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[1] Richard O. Peters, "New Hampshire (EE) Program", Environmental Education Report, Volume 4, Number 4, April 1976, pg. 9.

How do you accomplish this degree of tutelage that is necessary in order to affect student attitudes, behaviors, and sensitivity regarding life space environments? How can you (the teacher) bring about the direct interaction of students and life space phenomena? How can students be aided in the development of their sensitivity toward their life space?

PROXIMITY CONGRUENCY

In order for students to become aware of the character and nature of their life space - they must be exposed to it directly! There is both a time and a place for vicarious experiences but when dealing with student attitudes, behaviors and sensitivity about the life space - there is no adequate substitute for direct contact and exposure.

Therefore, there is a need for teachers to develop and offer instructional activities for students which provide for their direct interaction with life space phenomena. Proximity congruency is a state of harmony existant between two or more animate and/or inanimate objects. There is a need to bring objects together so that a natural state of interaction exists.

Proximity refers to a degree of nearness; the relative distance (perceived or physical) between two or more animate or inanimate objects.

If, for example, students are studying trees and their life cycles and the trees are outside the building while the students are inside the classroom - then there exists a state of proximity incongruency; that is, a situation designed to physically remove environmental life space phenomena one from the other or contrived to isolate and manipulate a given object.

In order to affect a harmony of parts (artifacts) there is a need to create a state of proximity congruency; that is, a situation designed to physically write environmental life space artifacts for purposes of interaction. Thus, if a teacher wants students to learn about trees and their life cycles then he/she must design learning experiences whereby students leave the school - go out into the environment - and interact directly with the trees on a participatory basis (e.g., study the bark of several different types of trees - appearance and texture; scrutinize leaf colors, shape and structure; and investigate the importance of tree shade to soil moisture and how-to-ground vegetation growth).

There are several strategies that can be used by classroom teachers for purposes of achieving a high degree of proximity congruency between students and life space phenomena.

1. Field trips. Organized instructional activities that usually involve a large number of students and require mass transportation to a site far removed from the school.
2. Nature walks. Activities for small groups of students which can be conducted either close to the school or

far removed. Usually, nature walks do not require bussing and are short in duration (time).

3. Site studies. If an environmental education program is to really become part of the on-going school curriculum, there is a need to create permanence. As the science classes have a lab space in which to conduct experiments - so does the EE program require a 'place' where student activities can be conducted. This 'place' should be an outdoor EE site; a geographical location where students can be taken and allowed to engage themselves in both structured and free-time activities (e.g., soil sampling, vegetation growth, water testing, pond life, nature's noises, trail hiking).

In conjunction with the outdoor studies, there are several activities which can take place in classrooms and which, in turn, compliment outdoor learning. As is the case with field trips, outdoor activities and experiences require planning and follow-up. Thus, classroom activities may constitute pre-outdoor orientation for students, may be used as a follow-up (review) activity to outdoor experiences, or during certain times of the year (in certain parts of the country when the weather does not permit outdoor activities) may take the place of field studies.

SAMPLE EE SENSORY LESSONS

EARTH'S RESOURCES GRADE RANGE: Grades 4-6

CONCEPT: To make students aware of the fact that Earth's resources are generally finite.

PURPOSE: Because natural resources are finite, MAN must conserve these precious commodities. He must plan to harvest these natural crops and devise ways by which he can manage their use.

ACTIVITIES:

1. Class/field discussions of the following topics:

   What is an environment?
   What is an ecosystem?
   How does nature keep its natural environment alive?
   How does recycling help keep a natural area alive?
   What is conservation?
   How does a large world population effect the conservation of non-renewable and renewable natural resources?

2. Students go on nature walks and field studies to collect samples of environmental resources (e.g., plants, rocks/minerals, water).

3. Students collect rock/mineral samples and create a geology rock box; classifying rocks as igneous, sedimentary or metamorphic.

4. Students draw pictures of the recycling process in a natural setting.

5. Students visit community conservation and pollution control projects - and discuss their operations with site resource people.

6. In the classroom, students make table-top scenes of natural environmental settings visited (e.g., a pond area, logging operations, a dam, a recreational area).

PLANTS AND ANIMALS GRADE RANGE: Grades 4-6

CONCEPT: Individual plants and animals can be identified by the various characteristics of their species.

PURPOSE: To acquaint students with the characteristics of life space artifacts; both animate and inanimate objects.

ACTIVITIES:

1. Students discuss topics such as: Why do things adapt? In what ways does adaptation protect both the individual living thing and the species? What is succession?
2. Students go on nature walks and collect samples of area vegetation. They study growth and development as well as structure.
3. Students observe and study the characteristics of amphibians, birds, insects, mammals and reptiles.
4. Students draw pictures of animals and plants that they have observed/studied.
5. Students select a site area plot and conduct seasonal studies (e.g., observing and studying animal and plant adaptation and changes over a given period of time).

RECREATION GRADE RANGE: Grades 4-6

CONCEPT: Concern for the natural environment should be coupled with its recreational use.

PURPOSE: The purpose of this lesson is to acquaint students with the beauty and character of the environment.

ACTIVITIES:

1. Students are taken on either a day trip or an overnight camping trip into the environment - for purposes of discovering their surroundings.

2. While in the natural setting, students collect rock and soil samples, identify different types of flora and fauna, etc.

3. Students identify either existant or potential 'problems' and discuss them.

4. Either individual students or small groups of students investigate the 'problems' discovered. Reports are developed.

METRIC MEASURE

GRADE RANGE: Grades 5-6

CONCEPT: The use of the Celcius thermometer.

PURPOSE: To acquaint students with the Celcius thermometer and how to graph temperature variances over a period of time.

ACTIVITIES:

1. Students discuss good placement locations for the thermometers, re: temperature variances.
2. Thermoemters are placed.
3. The thermometers are read once a day - at the same time. Information is recorded on charts at each site.
4. In the classroom, the site data is put on graphs.
5. Over a period of time, students can observe the variances in temperature at the several sites.

METRIC MEASURE GRADE RANGE: Grades 5-6

CONCEPT: To measure height by using shadows.

PURPOSE: To use the shadow - ratio method to measure the height of a tree and to acquaint students with the use of a meter stick.

ACTIVITIES:

1. Students go outdoors and select a tree to measure.
2. A meter stick is placed perpendicular to the ground and the length of the tree's shadow is measured.
3. With data collected, students solve this proportion:

$$\frac{\text{shadow of the object}}{\text{shadow of the stick}} = \frac{\text{object's height}}{\text{stick's height}}$$

METRIC MEASURE GRADE RANGE: Grades 5-6

CONCEPT: Metric length using objects and distances outdoors.

PURPOSE: To acquaint students with a system of measurement in relation to the environment and to the environment and to methods of recording information.

ACTIVITIES:

1. Students go outdoors - each equipped with a measuring device (e.g., meter stick, string, trundle meter wheel, tape measure) and a clipboard, pencil.

2. The students are divided into small groups or into teams of two.

3. The small groups measure objects/distances and record this data on their clipboard charts. The purpose of this lesson is to take students out into the natural environment, to acquaint them with life space objects, and measure size and distance.

PLANTS AND ANIMALS GRADE RANGE: Grades 5-6

CONCEPT: Individual plants and animals can be identified by the various characteristics of their species.

PURPOSE: Recognition of plants and animals during a hike. Charting recognized plants and animals in order to advance methods of observation and organization of information.

ACTIVITIES:

1. Before a field trip students should view films and filmstrips related to natural environments and wildlife.
2. Introduce students to books used for recognizing plants and animals.
3. Students walk through the forest or an EE site to observe wildlife and vegetation. They identify trees, flowers and wildlife and chart them.
4. Students keep logs of their experiences and observations.
5. Students conduct seasonal studies at selected site plots. They observe and record animal and plant adaptation and changes over a given period of time.

MEASUREMENT GRADE RANGE: Grades 5-6

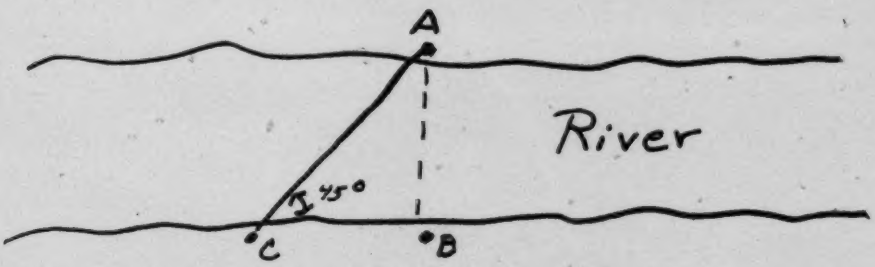
CONCEPT: How to measure the width of a river using angles.

PURPOSE: To acquaint students with using geometry to measure width.

ACTIVITIES:

1. Select a clearly visible point (object) across the river (point A).
2. Mark your position with a stake (point B).
3. Walk along the edge of the river until you reach a point at which a line from you to point A on the other side will make a 45 degree angle to a line along the edge of the river (point C). Use a compass to measure the angle 45 degrees.
4. In a 45 degree (isosceles) right triangle the two sides are of the same length (A-B and A-C).

To determine the width of the river - measure the distance between points B and C.



If the river runs north and south and you are on the east side, points A and C should be selected with a compass so that point A is 270 degrees (azimuth) from point C. Then point B should be determined by going south along the bank until you get a compass reading 315 degrees (270 degrees + 45 degrees) to point A. Measure distance D by pacing. If it is 200 feet, then the width of the river is approximately 200 feet.